3 April 1970

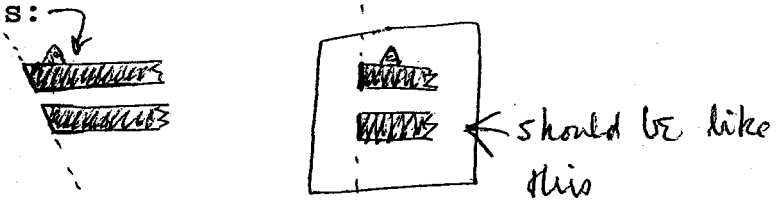
Harold:

Here is a note on cutting back a rifle barrel. You asked about this in your letter of 17 March.

Cutting back a barrel is not difficult, and can be done at home with ordinary tools. The quality of the job depend on the precision of the tools and the skill of the gunsmith, Variety of quality can go from a simple hack job to a job with all the fine cosmetic trimmings.

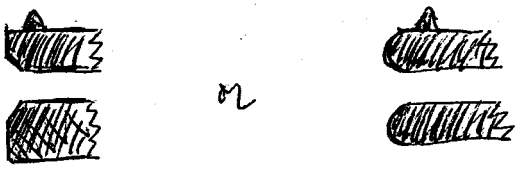
The simplest thing is simple to cut back the barrel with a hack saw and fire away. The hack saw will cause great roughness around the margin of the muzzle, and this will adversely affect accuracy-- it's likely to shoot very erratically; I can't say how bad, though.

Next best would be to hack off the barrel, as above, and then carefully file the muzzle so that it is both clear of roughness and perfectly square; that is, it should not be filed like this:



For this much of a job you need a hack saw, a file, and a square-- with perhaps some finishing with steel wool. No great skill is needed for this; just ordinary care. A short-barreled rifle cut back in this way would shoot just fine; effectively, it would be just as accurate as any other good rifle ove short ranges (say less than 75 yards). By "effectively" I mean that even if it is not as accurate as a finely tuned rifle, the difference would not be significant if you were shooting at targets more than an inch or two in diameter. If I were shooting rabbits at ranges inside 75 yards, for example, I would consider this rifle as serviceable as any.

The next stage of refinement is to crown the muzzle. This is mostly to protect the margins of the muzzle for accidentally being bumped and damaged (even a small burr at the muzzle is detrimental to accuracy). A lathe is needed for crowning. In crowning you just counter-sink the bore so that it is back a little from the most forward part of the muzzle. Like this:



Here, too, the margins of the bore-hole have to be smooth and squared. For crowning you have to know how to use a lathe, but otherwise it is not hard. Any matalworker can do it.

Other changes are cosmetic: buffing, bluing. They have no effect on accuracy.

I emphasise that for practiacl purposes, the detriment ot accuracy is not important. If the target is not too small and the range not too great, then a short barrel is just as useful as a long barrel. And is one applies proper care in cutting back, there need be no detriment to accuracy at all-- indeed, a good job of cutting back may even improve accuracy for short-range (75yard) shooting.

The really important detriment is in loss of velocity. How much velocity will be lost depends on the type of cartridge, the powder used, and how far beck the barrel is cut-- mostly on how far back it is cut. I cannot recall the rate of decrease for each inch of reduction in barrel length-- in this a lot would depend on the cartridge, so there is no standard rate of decrease. Offhand, I would say that if a barrel were cut back to less than 12" the loss of velocity would be great. Even so, if the velocity of a particular bullet is high to begin with (i.e., fired from a long barrel), then it's velocity from a short barrel might still be much higher than many other types of bullets whose normal velocity is low.

I really can't speculate much, for the variables are numerous and important. There is just not enough information available to make a proper guess. Considering the damage on JFK's head and the type of fragmentation in his brain, I would guess that he was hit by a small (55 to 80 grains) soft-nosed or hollow-point bullet that was moving more than 2700 feet per second when it hit him. At least that much velocity would be needed to produce the kind of bullet fragmentation that is described. I guess that the bullet is small, because it is normally the small bullets that move at such high velocity. I wouldn't like to say more. I put the cartridge in the class of varminting cartridges, for the damage on JFK seems the type of damage that such cartridges produce.

Another effect that barrel shortening would have is greater blast--i.e., a much louder boom than normal. The sound would be distinct both in its volume and in its quality. It would be far louder than normal, and would have less of a "crack" sound. The difference in quality is hard to describe in words. It's just that it's less "crack" and more "boom".

My experience in this covers rifles that have been cut back to legal sizes. I have not seen what happens with a rifle cut back to, say, 12". But I have seen and heard the same cartridge fired in rifles of different barrel lengths and the effects are as I have described them. More noise and more smoke from the shorter barrel.

Understand that my remarks in my previous letter were intended only as a rebuttal to the assertion that modern rifles cannot ~~fixe~~ produce a lot of white smoke. I have tried to apply the notion of a short-barreled rifle to the assassination. I find the notion consistent with what we know. But much more information is needed if one wants to do more than rebut a false assertion-- there is just not enough to say anything positive. I think it possible that a short barrelled rifle was used, but I would not ~~xxxxxxxxx~~ make a positive assertion that such a rifle was used.

Presently, the information that I gave you about short barrels is useful only as rebuttal-- very useful, in fact.

Must stop now to prepare for a class. I'll write again soon. I'm looking forward finally to having a bit of free time in a few days.

Still,

Dick